Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A device for detecting the presence of a compound in a sample, comprising:

(a) a substrate comprising a support with a metallized top surface;

(b) a self-assembled monolayer comprising an alkanethiol attached to the metallized top surface of the substrate, the alkanethiol having a functional group that reversibly or irreversibly interacts with the compound, wherein the functional group comprises a metal selected from the group consisting of Cd, Rb, K, Li, Cs, Ag, Au, Zn, Ti, Cr, Mn, Fe, Co, Ni, Zr, Nb, Ru, Rh, Hf, Ta, Re, Os, Ir, Pt, La, Sn, and Eu; and

(c) a liquid crystal disposed on a top surface of the self-assembled monolayer opposite the side of the self-assembled monolayer attached to the metallized top surface of the substrate, the liquid crystal comprising a moiety that interacts with the functional group of the alkanethiol, wherein when the compound is present in a sample that contacts the self-assembled monolayer, the orientation of the liquid crystal disposed on the self-assembled monolayer is altered.

2. (Previously Presented) The device of claim 1, wherein the functional group of the alkanethiol is a metal carboxylate.

3. (Cancelled).

4. (Original) The device of claim 1, wherein the liquid crystal is a nematic liquid crystal.

5. (Previously Presented) The device of claim 1, wherein the liquid crystal comprises a nitrile group, and the functional group of the alkanethiol is a metal carboxylate.

6. (Original) The device of claim 1, wherein the liquid crystal is 4-cyano-4'-pentylbiphenyl.

7. (Original) The device of claim 1, wherein the alkanethiol has the formula $HS(CH_2)_nCO_2H$ and n is an integer selected from the group consisting of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20.

8. (Original) The device of claim 7, wherein n is 10.

9. (Original) The device of claim 1, wherein the metallized top surface of the substrate comprises a metal selected from the group consisting of gold and silver.

10. (Original) The device of claim 1, wherein the metallized top surface comprises gold obliquely deposited at an angle of from about 30° to about 60° to a top surface of the support.

11. (Original) The device of claim 10, wherein the gold is obliquely deposited at an angle of about 50° to the top surface of the support.

12. (Original) The device of claim 10, wherein the gold is deposited over a layer of an adhesion promoting material.

13. (Original) The device of claim 1, wherein the support is a glass plate or a glass slide.

14. (Original) The device of claim 1, wherein the uniformity of the orientation of the liquid crystal on the self-assembled monolayer increases when the self-assembled monolayer is exposed to the sample and the sample includes the compound.

15. (Canceled)

16. (Original) An optical cell, comprising:

(a) the device of claim 1; and

(b) a second surface that uniformly aligns the liquid crystal when the liquid crystal contacts the second surface, wherein the second surface contacts a first surface of the liquid crystal which is opposite a second surface of the liquid crystal that contacts the self-assembled monolayer of the device.

17. (Previously Presented) A method for detecting the presence of a compound in a sample, comprising:

(a) contacting a device for detecting the presence of a compound in a sample with the sample, wherein the device for detecting the presence of the compound in a sample comprises:

(i) a substrate comprising a support having a metallized top surface; and

(ii) a self-assembled monolayer comprising a first alkanethiol attached to the metallized top surface of the substrate, the alkanethiol comprising an alkanethiol having a functional group that reversibly or irreversibly interacts with the compound, wherein the functional group comprises a metal selected from the group consisting of Cd, Rb, K, Li, Cs, Ag, Au, Zn, Ti, Cr, Mn, Fe, Co, Ni, Zr, Nb, Ru, Rh, Hf, Ta, Re, Os, Ir, Pt, La, Sn, and Eu;

(b) disposing a liquid crystal on a top surface of the self-assembled monolayer of the substrate, the liquid crystal having a moiety that interacts with the functional group of the alkanethiol; and

(c) determining whether the orientation of the liquid crystal on the self-assembled monolayer changes after the device contacts the sample.

18. (Original). The method of claim 17, wherein the liquid crystal is disposed on the top surface of the self-assembled monolayer of the substrate after the device contacts the sample.

19. (Original) The method of claim 17, wherein the liquid crystal is disposed on the top surface of the self-assembled monolayer before the device contacts the sample.

20. (Previously Presented) The method of claim 17, wherein the functional group of the alkanethiol is a metal carboxylate.

21. (Cancelled).

22. (Original) The method of claim 17, wherein the liquid crystal is a nematic liquid crystal.

23. (Previously Presented) The method of claim 17, wherein the liquid crystal comprises a nitrile group, and the functional group of the alkanethiol is a metal carboxylate.

24. (Original) The method of claim 17, wherein the liquid crystal is 4-cyano-4'-pentylbiphenyl.

25. (Original) The method of claim 17, wherein the alkanethiol has the formula $HS(CH_2)_nCO_2H$ and n is an integer selected from the group consisting of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20.

26. (Original) The method of claim 25, wherein n is 10.

27. (Original) The method of claim 17, wherein the metallized top surface of the substrate comprises a metal selected from the group consisting of gold and silver.

28. (Original) The method of claim 17, wherein the metallized top surface of the substrate comprises gold and the gold is obliquely deposited at an angle of from about 30° to about 60° to a top surface of the support.

29. (Original) The method of claim 28, wherein the gold is obliquely deposited at an angle of about 50° to the top surface of the support.

30. (Original) The method of claim 28, wherein the gold is deposited over a layer of an adhesion promoting material.

31. (Original) The method of claim 17, wherein the support is a glass plate or a glass slide.

32. (Original) The method of claim 17, wherein the uniformity in the orientation of the liquid crystal disposed on the self-assembled monolayer increases after the device is contacted with the sample when the sample includes the compound.

33. (Original) The method of claim 17, wherein the compound that the functional group of the alkanethiol interacts with is an amine.

34. (Original) The method of claim 33, wherein the amine is an alkylamine.

35. (Original) The method of claim 34, wherein the alkylamine has the formula $H_2N(CH_2)_mCH_3$, wherein m has a value of 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

36. (Original) The method of claim 35, wherein the alkylamine is hexylamine.

37. (Original) The method of claim 33, wherein the amine is a biogenic amine.

38. (Original) The method of claim 37, wherein the biogenic amine is selected from the group consisting of histamine, putrescine, and cadaverine.

39. (Original) The method of claim 17, wherein the compound that the functional group of the alkanethiol interacts with is a phosphorus compound.

40. (Original) The method of claim 39, wherein the phosphorus compound is an organophosphonate.

41. (Original) The method of claim 40, wherein the organophosphonate is a dialkyl alkylphosphonate.

42. (Original) The method of claim 41, wherein the dialkyl alkylphosphonate is dimethyl methylphosphonate.

43. (Original) The method of claim 17, wherein the sample is a gaseous sample or a liquid sample.

44. (Original) The method of claim 17, wherein the device for detecting the presence of a compound in a sample is a component of an optical cell comprising a second surface that uniformly aligns the liquid crystal when the liquid crystal contacts the second surface.

45. (Previously Presented) A kit for detecting the presence of a compound in a sample, comprising:

(a) a substrate having a support with a metallized top surface;

(b) an alkanethiol comprising a functional group that reversibly or irreversibly interacts with the compound, wherein the functional group comprises a metal selected from the group consisting of Cd, Rb, K, Li, Cs, Ag, Au, Zn, Ti, Cr, Mn, Fe, Co, Ni, Zr, Nb, Ru, Rh, Hf, Ta, Re, Os, Ir, Pt, La, Sn, and Eu; and

(c) a liquid crystal having a moiety that interacts with the functional group of the alkanethiol.

46. (Previously Presented) The kit of claim 45, wherein the functional group of the alkanethiol comprises a metal carboxylate.

47. (Previously Presented) A method for manufacturing a device for detecting the presence of a compound in a sample, comprising:

(a) depositing a metal on a surface of a support to form a support with a metallized surface;

(b) contacting an alkanethiol with the metallized surface of the support to form a self-assembled monolayer with a bottom surface attached to the metallized top surface of the support and a top surface, wherein the alkanethiol includes a functional group that reversibly or irreversibly interacts with the compound;

(c) contacting at least a first region of the self-assembled monolayer with a first metal salt to produce a first region with a first metal complex, wherein the metal is selected from the group consisting of Cd, Rb, K, Li, Cs, Ag, Au, Zn, Ti, Cr, Mn, Fe, Co, Ni, Zr, Nb, Ru, Rh, Hf, Ta, Re, Os, Ir, Pt, La, Sn, and Eu; and

(d) depositing a liquid crystal on the top surface of the self-assembled monolayer, wherein the liquid crystal comprises a moiety that interacts with the functional group of the alkanethiol.

48. (Original). The method of claim 47, wherein the functional group of the alkanethiol is a carboxylic acid.

49. (Previously Presented) The method of claim 47, wherein the first metal complex is a metal carboxylate.

50. (Cancelled).

51. (Previously Presented) The method of claim 47, wherein the liquid crystal comprises a nitrile group.

52. (Original) The method of claim 47, wherein the liquid crystal is 4-cyano-4'-pentylbiphenyl.

53. (Previously Presented) The method of claim 47, wherein the metal deposited on the support comprises gold and the gold is obliquely deposited on the support at an angle of from about 30° to about 60° to a top surface of the support.

54. (Original) The method of claim 53, wherein the gold is obliquely deposited on the support at an angle of about 50° to the top surface of the support.

55. (Original) The method of claim 53, wherein the gold is deposited over a layer of an adhesion promoting material on the surface of the support.

56. (Original) The method of claim 47, wherein the support comprises a glass plate or a glass slide.

57. (Original) The method of claim 47, further comprising positioning a second surface above the top surface of the self-assembled monolayer, wherein the second surface uniformly aligns the liquid crystal when the liquid crystal contacts the second surface.

58. (Original) The method of claim 57, wherein the second surface is a second support comprising a metallized surface having a second self-assembled monolayer comprising a second alkanethiol, wherein the second alkanethiol is different from the alkanethiol having the functional group that interacts with the compound.

59. (Previously Presented) The method of claim 47, further comprising contacting a second region of the self-assembled monolayer with a second metal salt different from that of the first metal salt to produce a second region of the self-assembled monolayer with a second metal complex that is distinct from the first region of the self-assembled monolayer.

60. (Previously Presented) A device for detecting the presence of a compound in a sample, comprising:

(a) a surface including functional groups, wherein the functional groups are bonded to a metal forming a metal complex, wherein the metal is selected from the group consisting of Cd, Rb, K, Li, Cs, Ag, Au, Zn, Ti, Cr, Mn, Fe, Co, Ni, Zr, Nb, Ru, Rh, Hf, Ta, Re, Os, Ir, Pt, La, Sn, and Eu; and

(b) a liquid crystal deposited over the surface, the liquid crystal including a moiety that reversibly binds to the metal of the metal complex such that at least a portion of the liquid crystal is bound to the metal complex;

wherein the metal complex is capable of reversibly or irreversibly binding a portion of the compound to be detected, such that when the compound is present in the sample, the portion of the compound will interact with the metal complex and displace at least some of the liquid crystal that was bound to the metal complex.

61. (Cancelled).

62. (Original) The device of claim 60, wherein the moiety of the liquid crystal is a nitrile group.

63. (Original) The device of claim 60, wherein the surface including functional groups comprises a semiconductor-based material and a self-assembled monolayer formed from alkanethiols bearing the functional groups.

64. (Original) The device of claim 63, wherein the semiconductor-based material is gallium arsenide.

65. (Previously Presented) A method for manufacturing a device for detecting the presence of a compound in a sample, comprising:

(a) depositing a metal on a surface of a support to form a support with a metallized surface;

(b) contacting an alkanethiol with the metallized surface of the support to form a self-assembled monolayer with a bottom surface attached to the metallized top surface of the support and a top surface, wherein the alkanethiol includes a functional group that reversibly or irreversibly interacts with the compound; and

(c) contacting a first region of the self-assembled monolayer with a first metal salt to produce a first region with a first metal complex and contacting a second region of the self-assembled monolayer with a second metal salt different from that of the first metal salt to produce a second region of the self-assembled monolayer with a second metal complex that is distinct from the first region of the self-assembled monolayer; and

(d) depositing a liquid crystal on the top surface of the self-assembled monolayer, wherein the liquid crystal comprises a moiety that interacts with the functional group of the alkanethiol.

66. (Previously Presented) The device of claim 65, wherein the second metal complex is a Cd^{+2} carboxylate.

67. (Previously Presented) A device for detecting the presence of a compound in a sample, comprising:

(a) a surface including functional groups, wherein the functional groups are bonded to a first metal in a first region forming a first metal complex and the functional groups are bonded to at least a second different metal in at least a second region of the surface forming at least a second metal complex; and

(b) a liquid crystal deposited over the surface, the liquid crystal including a moiety that reversibly binds to the metal of at least the first metal complex such that at least a portion of the liquid crystal is bound to the first metal complex;

wherein at least the first metal complex is capable of reversibly or irreversibly binding a portion of the compound to be detected, such that when the compound is present in the sample, the portion of the compound will interact with at least the first metal complex and displace at least some of the liquid crystal that was bound to the first metal complex.

68. (Previously Presented) The device of claim 67, wherein the first metal complex is a Cu^{+2} complex.

69. (Previously Presented) The device of claim 67, wherein the second metal complex comprises a metal selected from the group consisting of Cd, Rb, K, Li, Cs, Ag, Au, Zn, Ti, Cr, Mn, Fe, Co, Ni, Zr, Nb, Ru, Rh, Hf, Ta, Re, Os, Ir, Pt, La, Sn, and Eu.

70. (Previously Presented) The device of claim 67, wherein the second metal complex is a Cd^{+2} carboxylate.

71. (Previously Presented) The device of claim 67, wherein the surface including functional groups comprises a semiconductor-based material and a self-assembled monolayer formed from alkanethiols bearing the functional groups.

72. (Previously Presented) The device of claim 71, wherein the semiconductor-based material is gallium arsenide.